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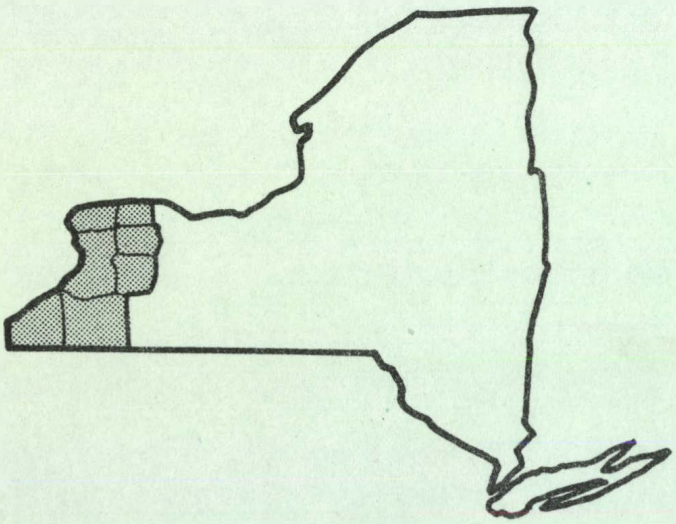
Forest Statistics for

NEW YORK

Forest District No. 5



Forest Statistics Series:
New York No. 6

Northeastern Forest Experiment Station

Upper Darby, Pennsylvania
Ralph W. Marquis, Director

1954

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United States Department of Agriculture • Forest Service

FOREWORD

This is the sixth in a series of reports about forest areas and timber volumes in the State of New York. These reports are products of the forest survey of the Northeast, carried on by the Northeastern Forest Experiment Station as part of the nationwide forest survey being made by the Forest Service, U. S. Department of Agriculture.

A similar report has been prepared for each of the other forest districts in the State of New York. The primary purpose of these reports is to provide basic forest statistics for the administrative use of the New York Department of Conservation.

The New York Department of Conservation aided the Northeastern Station greatly in the forest survey of the State. The Department not only provided the aerial photographs used in the survey, but also cooperated in many other phases of the work.

Field work in Forest District No. 5 was supervised by N. B. Griswold. The statistical procedures for obtaining field-inventory data were developed by C. Allen Bickford. Computations were made under the supervision of Roland H. Ferguson.

Ralph W. Marquis

Ralph W. Marquis
Director

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FOREST STATISTICS FOR NEW YORK FOREST DISTRICT NO. 5

Prepared by

Division of Forest Economics

Northeastern Forest Experiment Station
Forest Service, U.S. Dept. Agriculture

GENERAL

Forest District No. 5 is located in the western end of New York State. It extends from Lake Ontario south to the New York-Pennsylvania boundary and from Lake Erie east, almost to the Finger Lakes region. The District includes seven counties: Cattaraugus, Chautauqua, Erie, Genesee, Niagra, Orleans, and Wyoming.

The land in the northern portion is characterized by rolling hills, which gradually level off to flat terrain adjacent to Lake Ontario. The southern part, with the exception of a narrow belt along Lake Erie, is a part of the rugged Allegheny Plateau. More than one-half of the forest land drains into the Allegheny River and south into Pennsylvania, less than one-third into Lake Erie, and the rest into Lake Ontario.

Buffalo, the heart of the highly industrialized area in the District, is an important traffic center for lake and rail shipments between the East and West. Furniture manufacture is centered around Jamestown. However, the District is dominantly agricultural. Dairy products, fruits, and vegetables are the main products.

Forest Area

Forest District No. 5 has a total land area of about 3½ million acres. The forest-land area is slightly more than 1 million acres. A little less than 63,000 acres of forest land are reserved from commercial timber cutting. The acreage incapable of producing a stand of good timber is negligible. The remaining 954,000 acres are classed as commercial forest land.

The two largest counties, Cattaraugus and Chautauqua, are also the most heavily forested. Their combined commercial forest-land acreage represents more than three-fourths of the total

Ownership

About 94 percent of the commercial forest land is privately owned. This is almost equally divided between farmers and other private owners.

Only 6 percent is in public ownership, of which most is held by the State of New York in State Forests[1] (42,000 acres) and Game-Management Areas (6,000 acres). County, municipal, and Federal ownerships are minor except for Erie County, which has some 2,600 acres under intensive management under the direction of a resident county forester.

Forest Types

More than half the commercial forest land is occupied by the sugar maple-beech type, which occurs principally on the northern slopes and at the higher elevations. The aspen type is found on one-fifth of the forest area and its presence may indicate past misuse of the land.

Sixteen percent is in the ash-elm-maple types commonly found on the moister sites and along stream bottoms. White oak and red oak types occupy 9 percent of the forest land and are generally on the better sites on the south slopes. Softwood types, white pine and hemlock, account for only 1 percent of the commercial forest-land area.

[1] OUTSIDE THE LIMITS OF THE ADIRONDACK AND CATSKILL PARKS AND NOT SUBJECT TO THE CONSTITUTIONAL PROHIBITION AGAINST CUTTING, WHICH APPLIES TO THE STATE FOREST PRESERVE LANDS.

Forest Stands

Sawtimber stands of more than 5,000 board feet per acre are present on only 10 percent of the commercial forest-land area. This small area carries about one-third of the total sawlog volume. Sawtimber stands of lighter stocking but with at least 1,500 board feet per acre occupy 24 percent. About 31 percent of the total forest area is in pole-timber stands.

The remaining acreage (337,200 acres) has few or no sawtimber or poletimber trees. Classed as either seedling-and-sapling stands or other areas, it is not now producing a commercial timber crop.

Timber Volume

The commercial forests contain a little more than 2 billion board feet (log scale, International $\frac{1}{4}$-inch rule) of live sawtimber. Three hardwood species (sugar maple, beech, red maple) make up more than one-half of this volume and sugar maple alone accounts for nearly one-third. Soft-wood species make up about 10 percent of the total volume, but only one-fourth of softwood volume is found in the soft-wood types.

The growing stock amounts to 793 million cubic feet. Of this, 435 million are in sawtimber trees and 358 million in poletimber trees. The total cubic volume is the equivalent of almost 10 million rough standard cords.

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Table 1.--Land area by major classes, 1950

Class of land[1]	Area	
	Acres	Percent
Forest land:		
Commercial	954,100	27
Noncommercial[2]	62,700	2
All forest land	1,016,800	29
Nonforest land	2,501,300	71
All land[3]	3,518,100	100

[1] See Appendix for definitions.

[2] Includes 62,300 acres in State and County parks reserved from timber cutting and 400 acres of nonproductive forest land. State ownership figures are as of September 30, 1952.

[3] Census of Agriculture, 1950. Water areas of 1 to 40 acres are included in the estimate of nonforest acreage.

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Table 2.--Land area and commercial forest land area by county, 1950

County	Land area	Commercial forest land area	
	Acres	Acres	Percent
Cattaraugus	854,400	363,500	43
Chautauqua	691,200	260,500	38
Erie	674,600	139,000	21
Genesee	320,700	57,900	18
Niagara	341,100	26,300	8
Orleans	253,400	21,700	9
Wyoming	382,700	85,200	22
All	3,518,100	954,100	27

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Table 3.--Commercial forest-land area by ownership, 1950

Ownership class	Acreage held	
	Acres	Percent
Private:		
Farm forest land[1]	452,500	47
Other private	443,900	47
Total private	896,400	94
Public:		
State[2]	48,000	5
County	6,800	1
Municipal	2,400	(3/)
Federal	500	(3/)
Total public	57,700	6
All ownerships	954,100	100

[1]Census of Agriculture, 1950.

[2]Includes commercial forest land administered by the New York State Conservation Department as State Forests and Game Management Areas, amounting to 41,659.07 and 6,337.88 acres respectively. All State ownership figures are as of September 30, 1952.

[3]Less than 1 percent.

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Table 4.--Commercial forest-land area by forest type, 1950

Forest type	Area	
	Acres	Percent
Sugar maple-beech	522,900	55
Aspen	179,700	19
Ash-elm-maple	149,400	16
Other types[1]	102,100	10
All types	954,100	100

[1]Includes minor amounts of the white oak type (66,200 acres), red oak type (22,600 acres), and a negligible amount of the white pine and the hemlock types (13,300 acres).

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Table 5.--Commercial forest-land area by forest-type group and stand-size class, 1950

Forest-type group	Saw-timber stands	Pole-timber stands	Seedling-and-sapling stands and other areas	Total area
	Acres	Acres	Acres	Acres
Sugar maple-beech	245,900	181,500	95,500	522,900
Aspen	3,700	19,900	156,100	179,700
Ash-elm-maple	48,700	51,000	49,700	149,400
Other types	19,100	47,100	35,900	102,100
All types	317,400	299,500	337,200	954,100
Percent	34	31	35	100

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Table 6.--Commercial forest-land area by stand-size class and watershed, 1950

Stand-size class	Watershed			Total
	Allegheny River	Lake Erie and tributaries	Lake Ontario and tributaries	
	Acres	Acres	Acres	Acres
Sawtimber stands:				
More than 5,000 board feet per acre	36,700	23,000	32,500	92,200
1,500 to 5,000 board feet per acre	142,300	67,300	15,600	225,200
Poletimber stands:				
More than 600 cubic feet per acre	126,500	62,800	3,500	192,800
200 to 600 cubic feet per acre	54,200	30,900	21,600	106,700
Betterstocked[1] seedling-and-sapling stands	51,400	86,800	54,300	192,500
Poorly stocked seedling-and-sapling stands and other areas	96,700	11,200	36,800	144,700
Total	507,800	282,000	164,300	954,100
Percent	53	30	17	100

[1] 40 percent or better.

Table 7.--Net volume of live timber on commercial forest land by species, 1950

Species	Growing stock[1]		Saw-timber[2]
	Thousand cu.ft.	Equivalent in cords	Thousand bd.ft.
Hemlock[3]	55,200	690,000	171,400
White pine	12,700	158,800	43,300
All softwoods	67,900	848,800	214,700
Sugar maple	246,800	3,085,000	661,200
Beech	78,200	977,500	287,700
Red maple	81,100	1,013,800	235,400
Ash	75,000	937,500	193,200
Elm	61,000	762,500	187,900
Basswood	36,700	458,800	127,500
Black cherry	31,000	387,500	76,500
Red oak	29,300	366,200	57,000
White oak	13,400	167,500	35,600
Hickory	16,800	210,000	33,800
Other hardwoods	55,800	697,400	78,900
All hardwoods	725,100	9,063,700	1,974,700
All species[4]	793,000	9,912,500	2,189,400

[1]Includes sawtimber. Cord equivalent in rough standard cords is assumed to average 80 cubic feet of peeled wood.

[2]Log scale, International $\frac{1}{4}$-inch rule.

[3]Includes a negligible amount of cedar.

[4]Excludes the net volume of cull trees--10,800,000 cubic feet.

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Table 8.--Net volume of live timber on commercial forest land by diameter class, 1950

Diameter class[1] (in inches at breast height)	Growing stock	Saw-timber
	Thousand cu.ft.	Thousand bd.ft.
Softwoods:		
6	8,700	--
8	10,700	--
10	13,400	46,200
12	10,600	45,600
14	8,800	40,600
16	3,600	17,700
18 +	12,100	64,600
All softwoods	67,900	214,700
Hardwoods:		
6	80,400	--
8	118,400	—
10	139,400	—
12	91,300	379,400
14	92,400	452,300
16	60,600	317,800
18	55,200	309,100
20	35,900	209,000
22	14,400	82,400
24	18,700	112,600
26	10,700	65,000
28 +	7,700	47,100
All hardwoods	725,100	1,974,700
Total	793,000	2,189,400

[1] The midpoint of each 2-inch diameter class is indicated.

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Table 9.--Net volume of live timber on commercial forest land by forest type, 1950

Forest type	Growing stock		Saw-timber
	Thousand cu.ft.	Equivalent in cords	Thousand bd.ft.
Sugar maple-beech	567,300	7,091,200	1,642,600
Ash-elm-maple	130,500	1,631,200	379,100
Aspen	25,500	318,800	19,900
Other types[1]	69,700	871,300	147,800
All types	793,000	9,912,500	2,189,400

[1] Includes 51,300,000 cubic feet of growing stock in the red oak and white oak types, 18,400,000 cubic feet in the white pine and hemlock types.

Table 10.--Average net volume of live timber per acre of commercial forest land, by stand-size class, 1950

Stand-size class (and acreage of each class)	Growing stock	Saw-timber
	Cubic feet	Board feet
Sawtimber stands:		
More than 5,000 bd.ft. per acre (92,200 acres)	2,100	8,500
1,500 to 5,000 bd.ft. per acre (225,200 acres)	1,300	4,300
Poletimber stands:		
More than 600 cu.ft. per acre (192,800 acres)	1,100	1,300
200 to 600 cu.ft. per acre (106,700 acres)	500	800
Other[1] (337,200 acres)	120	260
Average, all classes[2] (954,100 acres)	830	2,290

[1]Includes seedling-and-sapling stands and non-stocked areas.

[2]Hardwoods constitute 90 percent of the total board-foot volume or 91 percent of the total cubic-foot volume in all stand-size classes. The average cubic volume in all stand-size classes is equivalent to 10 cords per acre.

APPENDIX

DEFINITIONS OF TERMS

Forest Areas

Forest-land area.--Includes (a) lands that are at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and which has not been developed for other use; and (c) afforested areas. (Forest tracts of less than 1 acre, isolated strips of timber less than 120 feet wide, and abandoned fields and pastures not yet 10 percent stocked are excluded.)

Commercial forest-land area.--Forest land that is (a) producing, or physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest-land area.--Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions.

Forest Types

Forest types are classified according to the species or species group that accounts for the major portion of the stand in terms of cubic feet in sawtimber and poletimber stands, or the number of stems in seedling-and-sapling stands.

Stand-Size Classes

Sawtimber stands.--Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International $\frac{1}{4}$-inch rule.

Poletimber stands.--Stands failing to meet the sawtimber stand specification, but at least 10 percent stocked with poletimber and larger (5.0 inches and larger) trees, and with at least half the minimum stocking in poletimber trees. (Poletimber stands carry at least 200 cubic feet per acre.)

Seedling-and-sapling stands.--Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling-and-sapling trees.

Other areas.--Forest-land areas not qualifying as sawtimber, poletimber, or seedling-and-sapling stands. (Includes nonstocked areas.)

Tree Classes

Sawtimber trees.--Trees of commercial species that contain at least one merchantable sawlog as defined by regional practice and that are of the following minimum diameters at breast height (d.b.h.): Softwoods 9.0 inches and hardwoods 11.0 inches. (All butt sawlogs are considered merchantable. Where the butt is defective, upper sawlogs are considered merchantable if they account--in terms of aggregate net volume--for 50 percent or more of the gross volume below the top of the uppermost sawlog. Softwood sawlogs are at least 6.0 inches in diameter inside bark at small end; 8 to 16 feet in length; sound and straight enough to be manufactured into standard lumber. The smaller logs are generally free of surface defects other than small tight knots. Hardwood sawlogs are at least 8.0 inches in diameter inside bark at small end; 8 to 16 feet in length; suitable for sawing into standard lumber, construction timbers, or ties.)

Poletimber trees.--Trees 5.0 inches d.b.h. and larger of commercial species that do not meet the specifications for sawtimber trees but do meet regional specifications of species, soundness, and freedom from defect. (These are the trees that are straight and clear enough to make sawtimber trees eventually.)

Seedling-and-sapling trees.--Trees of commercial species less than 5.0 inches in diameter at breast height.

Cull trees.--Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Timber Volume

Growing stock.--Net volume, in cubic feet, of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

This volume is also given in rough standard cords (bark included). Cord volume is derived from growing stock by applying a factor of 80 cubic feet per cord.

Live sawtimber volume.--Net volume in board feet, International ¼-inch rule, of live sawtimber trees.

FOREST-SURVEY METHODS

These forest statistics are based on information gathered from aerial photographs and from sample plots examined on the ground.

First, photo-interpretation plots were marked off on the aerial photographs. These plots were distributed uniformly by mechanical means over photographs of the entire district. Trained photo-interpreters then classified each photo-plot as either forest or nonforest. Forest plots were classified further according to stand-size and forest type.

Field crews inspected some of the photo-plots on the ground. Enough plots were selected at random so as to attain a specified level of statistical accuracy. Species and volume data were collected on these ground plots; and the photo classification of stand size and forest type was verified or--if necessary--changed.

The survey was designed for maximum efficiency in estimating total cubic volume to meet the national standards of accuracy.

ACCURACY OF THE ESTIMATES

The estimates in this report may contain two kinds of error. First, photo-interpreters may make mistakes of judgment and fieldmen may make mistakes in measuring or record-

ing. There is no practical way of finding out just how often such errors occur. But they are kept to a minimum by closely checking all phases of the work.

The second kind of error is associated with sampling procedures. The size of this sampling error can be measured. In Forest District No. 5 the probabilities are 2 out of 3 that the actual forest area is within ± 3.5 percent of the estimated forest area, that the actual cubic-foot volume is within ± 4.8 percent of the estimated cubic-foot volume, and that the actual board-foot volume is within ± 7.5 percent of the estimated board-foot volume. This does not include any mistakes in measurement or classification.

These percentages show that the area estimates are more accurate than the volume estimates, and that the cubic-foot estimates are more accurate than the board-foot estimates.

In each of the tables, the total figures are more accurate than the subtotals. The subtotals are more accurate than any of the individual figures. Figures that are small in relation to totals are subject to larger sampling errors.

SPECIES TALLIED

The various commercial tree species tallied in New York Forest District No. 5 are listed below. Approved common names[2] are shown in parentheses if these differ from the brief name used in the tables. Other tree species may occur in the area, but unless they were tallied on the field plots they were not included in the following list.

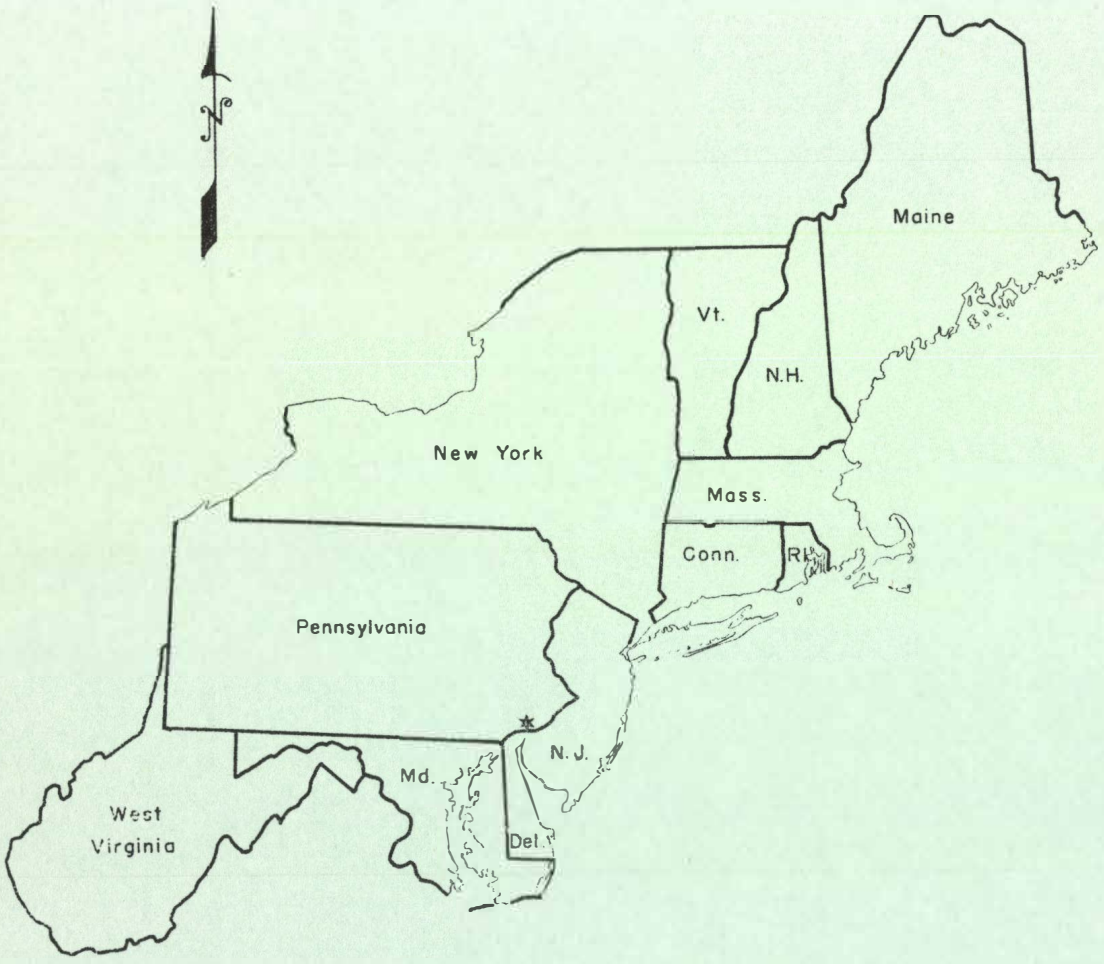
Softwoods

Hemlock (Eastern hemlock) - Tsuga canadensis
White pine (Eastern white pine) - Pinus strobus
(Red pine) - Pinus resinosa
Cedar (Northern white-cedar) - Thuja occidentalis

[2] LITTLE, ELBERT L., JR. CHECK LIST OF NATIVE AND NATURALIZED TREES OF THE UNITED STATES (INCLUDING ALASKA). U. S. DEPT. AGR., AGR. HANDB. 41. 472 PP. 1953.

Hardwoods

Sugar maple	- Acer saccharum
Beech (American beech)	- Fagus grandifolia
Red maple	- Acer rubrum
Ash	- Fraxinus species
Elm	- Ulmus species
Basswood (American basswood)	- Tilia americana
Black cherry	- Prunus serotina
Red oak (Northern red oak)	- Quercus rubra
(Black oak)	- Quercus velutina
(Scarlet oak)	- Quercus coccinea
White oak	- Quercus alba
Hickory	- Carya species
Other hardwoods	
(Yellow birch)	- Betula alleghaniensis
(Sweet birch)	- Betula lenta
(Bigtooth aspen)	- Populus grandidentata
(Quaking aspen)	- Populus tremuloides
(Black walnut)	- Juglans nigra
(Black locust)	- Robinea pseudoacacia
(Butternut)	- Juglans cinerea
(Cucumber tree)	- Magnolia acuminata



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